

Abstract of the Disclosure

A magnetic recording system, such as a magnetic recording disk drive, uses a patterned perpendicular magnetic recording medium where each magnetic block or island contains a stack of individual magnetic cells to provide multilevel recording. Each cell in an island is formed of a material or set of materials to provide the cell with perpendicular magnetic anisotropy and is a single magnetic domain. Each cell is magnetically decoupled from the other cells in its island by nonmagnetic spacer layers. Thus each cell can have a magnetization (magnetic moment) in one of two directions (into or out of the plane of the layer making up the cell), and this magnetization is independent of the magnetization of the other cells in its island. This permits multiple magnetic levels or states to be recorded in each magnetic island.